**Unit 8 Day 1:Periodic Data,** **The Unit Circle, and Radian/Degree Measure** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Periodic Functions**

A periodic function is a function that repeats a pattern of ­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (or outputs) at regular intervals.

One complete pattern is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A cycle may begin at any point on the graph of a function.

The time it takes for a cycle to repeat is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The amplitude of a periodic function measures the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (up and down) in the function values.

The amplitude can be found using the formula:

**Example:** What is the amplitude of the function below? **You Try!** What is the amplitude of each periodic function?



**Radians vs. Degrees**

A degree is the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ around a circle (used in geometry and real-world applications)

A **radian** is the measure of the \_\_\_\_\_\_\_\_\_\_\_. (Think: circumference = \_\_\_\_\_\_\_\_\_\_\_\_) You can switch between using degrees and radians.

**Converting between Degrees and Radians**

|  |  |  |
| --- | --- | --- |
| **To convert FROM…** | **TO…** |  |
| **Degrees** | **Radians** |  |
| **Radians** | **Degrees** |  |

**Note:** Radians must always be in \_\_\_\_\_\_\_\_\_ form. Degrees must always be in \_\_\_\_\_\_\_\_\_ form.

|  |  |  |  |
| --- | --- | --- | --- |
| **Convert from…** | **To…** | **Formula** | **Answer** |
| 90° | Radians |  |  |
| $\frac{7π}{6}$ radians | Degrees |  |  |
| 200° | Radians |  |  |
| $\frac{5π}{4}$radians | Degrees |  |  |
| -150° | Radians |  |  |
| 5 radians | Degrees |  |  |
| 540° | Radians |  |  |
| $\frac{7π}{8}$radians | Degrees |  |  |
| $\frac{6π}{7}$radians | Degrees |  |  |
| 52° | Radians |  |  |

**The Unit Circle**

A full rotation around a circle totals \_\_\_\_\_\_\_\_\_\_\_\_\_ degrees, which is the same as\_\_\_\_\_\_\_\_\_\_\_\_ radians.

 **Multiples of 45° Multiples of 30°**

 ****

The symbol used for an unknown angle is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ it looks like this: **Ѳ**

Instead of creating a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and doing “SOHCAHTOA” to find the sine, cosine or tangent, you can use the unit circle to look up the values quickly. Just remember that cos(Ѳ) = \_\_\_\_\_\_\_ and sine(Ѳ) = \_\_\_\_\_\_\_\_\_.

* x-value of the coordinate= \_\_\_\_\_\_\_\_\_\_\_\_ of that angle
* y value of the coordinate=\_\_\_\_\_\_\_\_\_\_\_\_\_ of that angle
* $\frac{y-value}{x-value}$ = the ­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of that angle

 **Positive angle move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Negative angle move\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. cos(45°)
2. sin(120°)
3. cos(180°)
4. tan(315°)
5. $\cos(\left(\frac{π}{6}\right))$
6. $\sin(\left(\frac{4π}{3}\right))$
7. $\cos(\left(\frac{3π}{4}\right))$
8. $\tan(\left(\frac{7π}{4}\right))$
9. cos(-45)°
10. sin(-120°)
11. tan(180)°

1. cos(-315°)